**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Cell Membrane & Transport (Passive and Active) Webquest**

**Directions:** In this activity, you will visit various websites in order to review information about the cell membrane and transport. You will copy the website into your web browser and then use the information provided through text, animations, or interactive demonstrations to answer the questions that follow each website on your sheet.

PART I: CELL MEMBRANES

**WEBSITE #1:**

<http://www.wisc-online.com/objects/index_tj.asp?objID=AP1101>

1. What is the BASIC UNIT of LIFE?
2. What are the TWO MAIN COMPONENTS that make up the CELL MEMBRANE?

A. B.

1. What types of molecules can EASILY go through your cell membrane or are PERMEABLE to the cell membrane?
2. B. C.
3. What types of molecules CANNOT easily go through your cell membrane?
4. B. C.
5. DRAW THE PHOSPHOLIPID BILAYER of the CELL MEMBRANE, labeling the HYDROPHILIC HEADS and HYDROPHOBIC TAILS.
6. TRUE OR FALSE: CARBOHYDRATES also make up part of the cell membrane...What is their FUNCTION?

**WEBSITE #2**

<http://www.wiley.com/college/pratt/0471393878/student/animations/membrane_transport/index.html>

1. TRUE or FALSE: Some of the metabolically important molecules your body needs in order to survive CANNOT pass through the lipid bilayer of the cell membrane.
2. The TAILS or INTERIOR of the cell membrane is made of a WATER LOVING

(hydrophilic) or WATER HATING (hydrophobic) molecule.

* What is the name of this molecule?

1. Which part of the membrane might function to transport hydrophillic or WATER LOVING substances into the cell?
2. What are TWO REASONS why a substance cannot make through the LIPID BILAYER?

A.

B.

1. What is facilitated transport?
2. Facilitated Transport ALWAY S involves what part of the CELL MEMBRANE?
3. In terms of energy, what is the difference between ACTIVE TRANSPORT vs. PASSIVE TRANSPORT?
4. What is the energy used to facilitate ACTIVE TRANSPORT?

**STOP AT SECTION #8**

**PART II: PASSIVE TRANSPORT**

**WEBSITE #1:**

<http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html>

PART ONE: Choose PASSIVE TRANSPORT FIRST

1. Define PASSIVE TRANSPORT:
2. What are three types of PASSIVE TRANSPORT?

A.

B.

C.

**PRESS “NEXT”**

PARTS of a CELL MEMBRANE:

1. Draw what a CELL MEMBRANE looks like and label the TWO COMPONENTS of the CELL MEMBRANE below:
2. What is the function of INTERGRAL PROTEINS?
3. Cell Membranes are said to be SEMIPERMEABLE, what does that mean?

DIFFUSION

1. Define simple diffusion and ILLUSTRATE a “before” and “after” example:
2. Define a CONCENTRATION GRADIENT:
3. Identify THREE factors that can have an effect on the RATE of DIFFUSION:

a.

1. c.
2. What is meant by the term EQUILIBRIUM?
3. DRAW a PICTURE showing a CELL that is IN EQUILIBRIUM:

FACILITATED DIFFUSION

1. Define facilitated diffusion:
2. Does facilitated diffusion take energy for the cell?
3. What molecules within the cell membrane play a VITAL ROLE in FACILITATED DIFFUSION?
4. What does the word “FACILITATE” mean?

OSMOSIS

1. Define osmosis:
2. Explain how osmosis is a UNIQUE form of diffusion.
3. Draw a situation in which a cell is in a HYPOTONIC solution.. ..DRAW a BEFORE and AFTER PICTURE to show the change in size of the cell.

BEFORE AFTER

1. Draw a situation in which a cell is in a HYPOTONIC solution.. ..DRAW a BEFORE and AFTER PICTURE to show the change in size of the cell.

BEFORE AFTER

**WEBSITE #2:**

[**http://www.vivo.colostate.edu/hbooks/cmb/cells/pmemb/osmosis.html**](http://www.vivo.colostate.edu/hbooks/cmb/cells/pmemb/osmosis.html)

**Scroll down "**The classic demonstration of osmosis and osmotic pressure is to immerse red blood cells in solutions of varying osmolarity and watch what happens"

1. What does a Red Blood Cell look like in an ISOTONIC SOLUTION? Draw it below and explain why it would look this way.
2. What does a Red Blood Cell look like in a HYPERTONIC SOLUTION? Draw it below and explain why it would look this way.
3. What does a Red Blood Cell look like in a HYPOTONIC SOLUTION? Draw it below and explain why it would look this way.

**WEBSITE #3:** Diffusion, Dialysis and Osmosis Tutorial

<http://nhscience.lonestar.edu/biol/osotutor.html>

1. EXPLAIN why food coloring particles are FIRST condensed into a single drop, but after revisiting the cup of water several minutes later, the entire cup of water is colored.

**CLICK ON ANIMAL CELL MEMBRANE TUTORIAL** Animal Cell Membrane Tutorial - Page 1 of 3

The following Image shows a **normal functioning** red blood cell as it would appear when in plasma. Select the correct answers to the following questions.

1. The plasma is a(an) solution to the solution in the red

blood cell.

1. The diffusion of water(osmosis) into the cell is the diffusion of

water(osmosis)out of the cell.

1. The turgor pressure of the RBC is zero.
2. The pressure on the inside of the cell is the pressure on the

outside.

NOW, CLICK ON “NEXT” at the BOTTOM of the page.

Animal Cell Membrane Tutorial - Page 2 of 3

Below are images showing what happens to a normal red blood cell when placed in a 1.3% salt solution. Select the correct answers to the following questions.

1. This red blood cell can now be described as being .
2. The % concentration of water in the cell was the %

concentration of water in the salt solution.

1. Thus the net direction of osmosis was the red blood cell.
2. The salt solution was relative to the red blood cell.

NOW, CLICK ON “NEXT” at the BOTTOM of the page.

Animal Cell Membrane Tutorial - Page 3 of 3

Below are images showing what happens to a normal red blood cell when in distilled water. Select the correct answers to the following questions.

1. This red blood cell can now be described as being .
2. The distilled water was relative to the cell.
3. The cell was relative to the distilled water.
4. The direction of net osmosis was the cell.

**PART TWO: ACTIVE TRANSPORT**

**WEBSITE #1:**

<http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html>

**CLICK on “ACTIVE TRANSPORT”**

1. Define ACTIVE TRANSPORT.
2. Why might a cell go through active transport?
3. What are THREE TYPES of ACTIVE TRANSPORT?

A.

B.

C.

1. What is ATP? What does ATP turn into after it is used? (Y ou will have to watch the animation on ion pumps first to answer this question)
2. What is an ion pump? Explain using the words CONCENTRATION GRADIENT, PROTEIN, and CHARGE. DRAW A PICTURE in addition to your explanation!
3. What is COTRANSPORT? EXPLAIN in terms of steps using an example.

STEP ONE:

STEP TWO:

STEP THREE:

ENDOCYTOSIS:

1. What is ENDOCYTOSIS?
2. What are the THREE TYPES of ENDOCYTOSIS?

A.

B.

C.

1. What is PHAGOCYTOSIS?
2. What are PSEUDOPODS?
3. What is PINOCYTOSIS?

**WEBSITE #2**

<http://highered.mcgraw-hill.com/sites/0072437316/student_view0/chapter6/animations.html>

**CLICK on ENDOCYTOSIS/EXOCYTOSIS**

1. WHY does a cell go through ENDOCYTOSIS?
2. The website states that “SINGLE CELLED EUKARYOTIC ORGANISMS” go through ENDOCYTOSIS. To what KINGDOM do these organisms belong to? (Will have to RESEARCH THIS)
3. What is the difference between PHAGOCYTOSIS and PINOCYTOSIS?